

Radio Forges the Links of Empire

IT was once said that the colonies were drifting apart because of their increasing self-reliance and the distance which separated them. Each colony, it was claimed, was developing a nationality of its own. The war, in all its grimness and horror, served as a link in the chain of Empire, both in that the citizens of one colony mingled with those of another, and with those of the mother country, in the capacity of soldiers fighting side by side for the same cause, and in that it made clear the need of a system of communications and acted as an impetus to it. Since then developments have not moved slowly, as the accompanying article shows. Wireless is destined to do great things to accomplish world unity, more so than the casual wireless enthusiast, or indeed the man in the street, realises. Irrespective of all opposition, this relatively new development is steadily making its way to the fore and demanding the consideration of every nation that wishes to maintain its position in the van of national development.



THE idea of linking up the Empire by a network of radio stations first took shape in 1912, when the Government decided to proceed with a scheme for the erection of a chain of high-power spark stations in Europe, East Africa, South Africa, India, and Singapore.

In the following year a contract was made by the Post Office with the Marconi Company for the erection of these stations, but the work on the English and Egyptian ones had only just commenced when war broke out and changed the whole course of events. The contract was cancelled, and nothing further was done towards the erec-

tion of Imperial stations for intercommunication until after the war.

The Admiralty, indeed, did set up a number of telegraphy stations during the war at strategic points throughout the Empire, but these were designed primarily for communicating with ships. One of them was suitable for commercial intercommunication.

These strategic stations were for the most part erected by the Marconi Company as contractors.

It was, of course, due to the fact that our supremacy at sea ensured the safety of the vast cable network which connects all parts of the Empire that the policy of providing Imperial radio stations could be postponed, and it was

the possession of this cable network in peace time that had allowed us to dally so long before the outbreak of war with the idea of an Imperial wireless chain.

It was obvious that the Empire needed wireless communication from the commercial point of view, but there was a general feeling that radio technique was improving so rapidly that delay was justifiable.

The war, however, altered the whole outlook, and it is easy now to see that high-power stations throughout the Empire would have seriously hampered the naval activities of our enemies in the early stages of the war, and that in all probability millions of pounds would have been saved by the timely expenditure of thousands.

Germany, on the other hand, when war broke out, had made considerable progress with a colonial wireless network which proved of greatest value to her so long as she was able to hold it. The United States and France had also made a start with high-powered schemes which, as their needs were different to ours, they continued to develop throughout the war, and by 1919 they were both far ahead of us in this respect.

How the Beam Began.

IN 1919 the Government appointed a committee, under the chairmanship of Sir Henry Norman, to draw up a new scheme for Imperial wireless communication, and this committee recommended that stations should be erected in England, Egypt, Kenya, South Africa, India, Singapore, Hong Kong and Australia, as well as possibly two in Canada, for trans-Atlantic and trans-Pacific communication.

The result of this decision is that there is in operation at Rugby, England, since the beginning of 1926, the most powerful station in the world, capable of transmitting messages to any part of the Empire. The total cost of this station was about £480,000.

Meanwhile, early in 1924, Senatore Marconi had published the results of his experiments on the beam transmission of short waves, and in July, 1924, the Home Government of the Dominions and India made a contract with the Marconi Company for the erection of beam stations in England, Canada, Australia, South Africa and India for the direct communication with England.

How the Beam Works.

HERTZ showed that electro-magnetic waves a few feet in length could be reflected by mirrors like a pencil of light, and in his early investigations Marconi employed metallic mirrors to

direct the wireless waves in the required direction. It is, however, a condition of such reflection that the dimensions of the mirror must not be very small compared with the wavelength. It was, of course, impossible to erect large mirrors of sheet metal of sufficient size to reflect electrical waves several thousand feet in wavelength, but it was found that skeleton mirrors formed by erecting vertical wires round a parabolic line would act as well if a vertical aerial radiator was erected in the focal line.

Early experiments by Senatore Marconi and Mr. C. S. Franklin, using a wavelength of 50ft., showed that a "wireless beam" could be projected by such a mirror from London to Birmingham, in which the electro-magnetic waves were kept from spreading just like a searchlight projects a straight beam of light. Further and extensive tests and researches have enabled investigators to project beams of electro-magnetic waves of about 90 metres or 300ft. in length, not only to Madeira and to St. Vincent, but even to South America, and most recently to Australia, a distance of 12,000 miles.

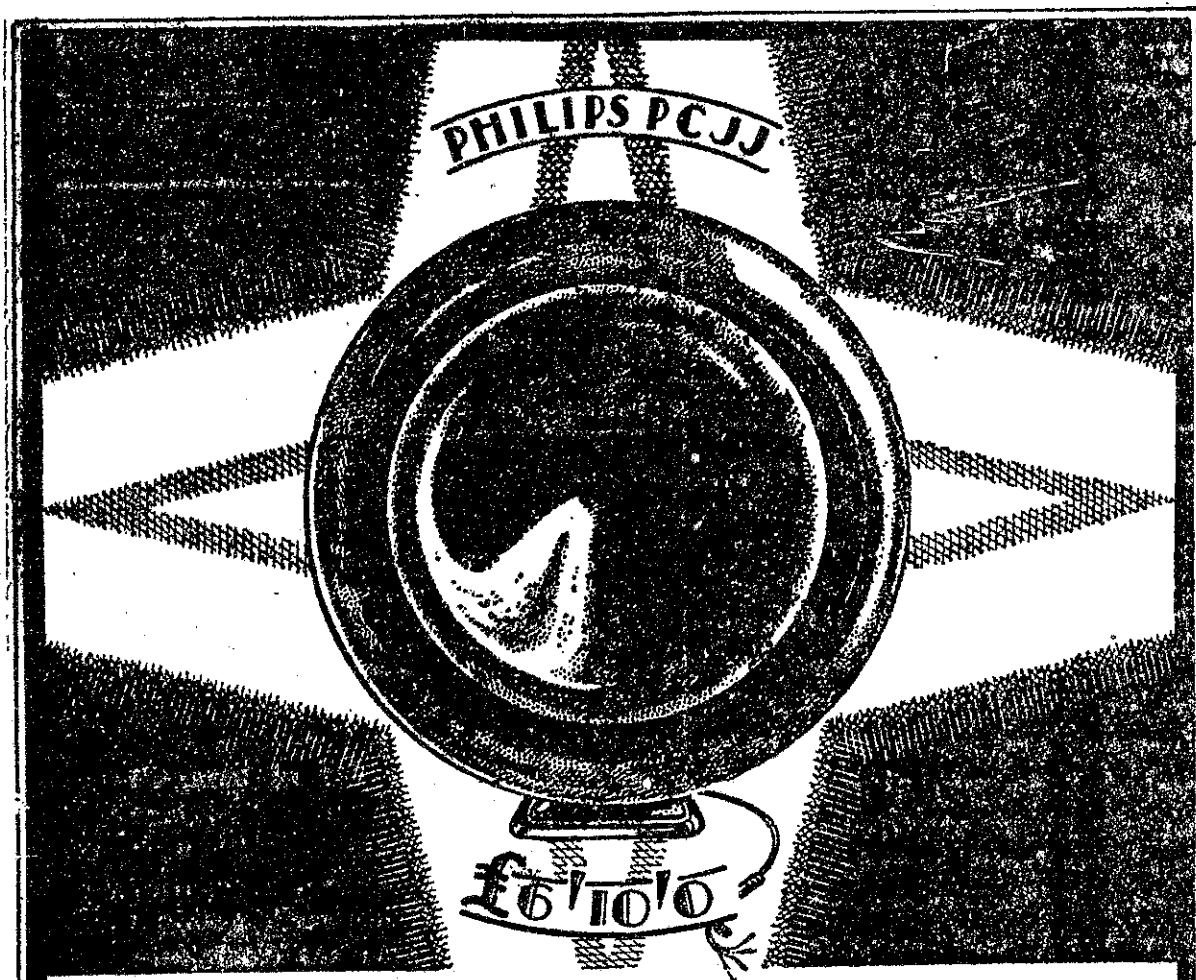
The Question of Control.

THE English stations were to be worked by the post office, the others by the company, or the company's representatives. Duplex communication at a speed of 100 five-letter words a minute each way was guaranteed for a daily service of 18 hours with Canada, 12 with India, 11 with South Africa, and seven with Australia.

No provision has yet been made for wireless telephone service, but experiments are now being carried out with apparatus for operating two high-speed telegraph circuits simultaneously with a duplex telephone circuit, using the same transmitter, aerial, and wave for the three circuits.

All the telegraph services have been in operation for several months, and on June 15 last, a similar beam service was opened between Australia and Canada. On the same day, too, the Post Office, England, opened a short-wave service, but not on the beam system between England and the Kenya Colony. The rates charged for these services are substantially lower than those charged by the cables, and a review of the whole system was made by a recent committee.

At the present time, the control of the cables and the beam wireless is a matter to be settled. A Bill has been presented to the English Parliament, providing for the sale of the cables, and the lease of the beam plant not controlled by the Post Office. It has brought down a storm of objections to



A SPEAKER YOUR receiver *must* have!

If you have taken pride in your radio reproduction—that is if you have quality transformers, a power valve in the last stage, and correct plate and grid voltages—you MUST have a Philips Speaker.

With a GOOD receiver they are in their

element, reproducing without emphasis or suppression—giving music pulsating with life.

'PCJJ,' £6/10/- 'Junior,' £5/5/-
'Baby Grand' £3/15/-

Advt. of Philips Lamps (N.Z.) Ltd. (Radio Dept.), Hope Gibbons Building, Courtenay Place, Wellington

PHILIPS

LOUDSPEAKERS

8RSN